IN THE CLAIMS

What is claimed is:

1. (Original) A constant velocity universal joint comprising:

an outer joint member having three track grooves formed in an inner periphery thereof, each of said track grooves having axial roller guideways on both sides thereof;

a tripod member having three radially-projecting trunnions; and

rollers respectively arranged on said trunnions of said tripod member, said rollers being guided by said roller guideways, wherein

at least either induced thrust or slide resistance is regulated within a specification.

2. (Original) The constant velocity universal joint according to claim 1, wherein the tertiary rotational component of said induced thrust is regulated to or below 30 N (RMS) under the following condition (X1):

the number of revolutions R = 100-500 (rpm),

an operating angle θ = 0-14 (deg), and

load torque T = 0.1 × Ts (N·m),

where “RMS” represents a root means square, and Ts is the minimum static torsion torque at which a shaft to be coupled to said tripod member causes a torsion fracture.

3. (Original) The constant velocity universal joint according to claim 1, wherein the tertiary rotational component of said induced thrust is regulated to or below 55 N (RMS) under the following condition (X2):

the number of revolutions R = 100-500 (rpm),

an operating angle θ = 0-14 (deg), and

load torque T = 0.2 × Ts (N·m),

where "RMS" represents a root means square, and Ts is the minimum static torsion torque at which a shaft to be coupled to said tripod member causes a torsion fracture.

4. (Original) The constant velocity universal joint according to claim 1, wherein the tertiary rotational component of said induced thrust is regulated to or below 80 N (RMS) under the following condition (X3):

the number of revolutions R = 100-500 (rpm),

an operating angle θ = 0-14 (deg), and

load torque T = 0.3 × Ts (N·m),

where "RMS" represents a root means square, and Ts is the minimum static torsion torque at which a shaft to be coupled to said tripod member causes a torsion fracture.

5. (Original) The constant velocity universal joint according to any one of claims 1-4, wherein said slide resistance is regulated to or below 40 N (peak to peak) under the following condition (Y1):

the number of revolutions R = 0 (rpm),

an operating angle θ = 0-10 (deg),

load torque T = 98-196 (N·m),

a vibrating frequency f = 15-40 (Hz), and

vibrating amplitude = ±0.01 to ±0.03 (mm),

where "peak to peak" represents the total of the absolute values of positive and negative peak values.

6. (Original) The constant velocity universal joint according to any one of claims 1-4, wherein said slide resistance is regulated to or below 60 N (peak to peak) under the following condition (Y2):

the number of revolutions R = 0 (rpm),

an operating angle θ = 0-10 (deg),

load torque T = 98-196 (N·m),

a vibrating frequency f = 15-40 (Hz), and

vibrating amplitude = ±0.05 to ±0.08 (mm),

where "peak to peak" represents the total of the absolute values of positive and negative peak values.

7. (Original) The constant velocity universal joint according to any one of claims 1-4, wherein said slide resistance is regulated to or below 80 N (peak to peak) under the following condition (Y3):

the number of revolutions R = 0 (rpm),

an operating angle θ = 0-10 (deg),

load torque T = 98-196 (N·m),

a vibrating frequency f = 15-40 (Hz), and

vibrating amplitude = ±0.10 to ±0.25 (mm),

where "peak to peak" represents the total of the absolute values of positive and negative peak values.

8. (Original) The constant velocity universal joint according to claim 1, comprising roller assemblies for allowing tilting movements of said rollers with respect to said trunnions.

9. (Original) The constant velocity universal joint according to claim 8, wherein:

said roller assemblies include said rollers and support rings for supporting said rollers rotatably, said support rings being fitted onto the outer peripheries of said trunnions;

the inner peripheries of said support rings have an arcuate convex section; and

the outer peripheries of said trunnions are straight in a longitudinal section, and so shaped in a cross section as to make contact with the inner peripheries of said support rings in directions perpendicular to the axis of the joint and create clearances with the inner peripheries of said support rings in the axial direction of the joint.

10. (Original) The constant velocity universal joint according to claim 9, wherein said trunnions have a cross section of generally elliptic shape with the major axis perpendicular to the axis of the joint.

11. (Original) The constant velocity universal joint according to claim 8, wherein:

said roller assemblies include said rollers and support rings for supporting said rollers rotatably, said support rings being fitted onto the outer peripheries of said trunnions;

the outer peripheries of said trunnions have a convex spherical shape; and

the inner peripheries of said support rings have a cylindrical or conical shape.

12. (Original) The constant velocity universal joint according to claim 9, wherein a plurality of rolling elements are interposed between said support rings and said rollers.

13. (Original) The constant velocity universal joint according to claim 12, wherein said rolling elements are needle rollers.

14. (Original) A constant velocity universal joint comprising:

an outer joint member having three track grooves each having circumferentially-opposed roller guideways;

a tripod member having three radially-projecting trunnions;

rollers inserted into said track grooves; and

rings fitted onto said trunnions, for supporting said rollers rotatably,

said rollers being capable of moving along said roller guideways in the axial direction of said outer joint member, wherein

the ratio of the pitch circle diameter T_{PCD} of said track grooves to the pitch circle diameter S_{PCD} of a spline hole formed in said tripod member, or T_{PCD}/S_{PCD}, is set within the range of 1.7-2.1,

the ratio of the diameter D_J of said trunnions to the pitch circle diameter S_{PCD} of said spline hole, or D_J/S_{PCD}, is set within the range of 0.6-1.0, and

the ratio of the outer diameter D_R of said rollers to the pitch circle diameter S_{PCD} of said spline hole, or D_R/S_{PCD}, is set within the range of 1.4-2.3.

15. (Original) The constant velocity universal joint according to claim 14, wherein:

said rings have a spherical cross section;

said trunnions are so shaped in a cross section as to make contact with the inner peripheries of said rings in directions perpendicular to the axis of the joint and create clearances with the inner peripheries of said rings in the axial direction of the joint;

the ratio T_{PCD}/S_{PCD} is set within the range of 1.72-2.10;

the ratio of the dimension D_{JL} of said trunnions in the directions perpendicular to the axis of the joint to the pitch circle diameter S_{PCD} of said spline hole, or D_{JL}/S_{PCD}, is set within the range of 0.63-0.94; and

the ratio D_R/S_{PCD} is set within the range of 1.47-2.21.

16. (Original) The constant velocity universal joint according to claim 14, wherein the ratio of the outer diameter D_O of said outer joint member to the pitch circle diameter S_{PCD} of said spline hole, or D_O/S_{PCD}, is set within the range of 2.78-3.77.

17. (Original) The constant velocity universal joint according to claim 14, wherein the ratio of the barrel width H_T of said tripod member to the pitch circle diameter S_{PCD} of said spline hole, or H_T/S_{PCD}, is set within the range of 0.81-1.22.

18. (Original) The constant velocity universal joint according to claim 14, wherein the ratio of the width H_R of said rollers to the pitch circle diameter S_{PCD} of said spline hole, or H_R/S_{PCD}, is set within the range of 0.38-0.67.

19. (Original) The constant velocity universal joint according to claim 14, wherein the ratio of the radius of curvature R_R of the outer peripheries of said rollers to the pitch circle diameter S_{PCD} of said spline hole, or R_R/S_{PCD}, is set within the range of 0.19-1.11.

20. (Original) A constant velocity universal joint comprising:

an outer joint member having three axial track grooves formed in an inner periphery thereof, each of said track grooves having axial roller guideways on both sides thereof;

a tripod member having three radially-projecting trunnions; and

roller assemblies respectively mounted on said trunnions of said tripod member, said roller assemblies including rollers to be guided along said roller guideways in directions parallel to the axis of said outer joint member and support rings for supporting said rollers rotatably, said roller assemblies being capable of tilting movements with respect to said trunnions,

the constant velocity universal joint further comprising

tilt suppressing means for suppressing tilts of said roller assemblies within a cross section perpendicular to the axis of the joint due to inward components of load applied to contact portions between said trunnions and said roller assemblies,

wherein said tilt suppressing means comprise the outer peripheries of said rollers, shaped into arcuate convex sections having the centers of curvature in the vicinities of lines parallel to the axes of said rollers, said lines passing through said contact portions.

21. (Canceled)

22. (Original) A constant velocity universal joint comprising:

an outer joint member having three axial track grooves formed in an inner periphery thereof, each of said track grooves having axial roller guideways on both sides thereof;

a tripod member having three radially-projecting trunnions; and

roller assemblies respectively mounted on said trunnions of said tripod member, said roller assemblies including rollers to be guided along said roller guideways in directions parallel to the axis of said outer joint member and support rings for supporting said rollers rotatably, said roller assemblies being capable of tilting movements with respect to said trunnions,

the constant velocity universal joint further comprising

tilt suppressing means for suppressing tilts of said roller assemblies within a cross section perpendicular to the axis of the joint due to inward components of load applied to contact portions between said trunnions and said roller assemblies, wherein:

the inner peripheries of said support rings have an acruate convex section;

the outer peripheries of said trunnions are straight in a longitudinal section, and so shaped in a cross section as to make contact with the inner peripheries of said support rings in direction perpendicular to the axis of the joint and create clearances with the inner peripheries of said support rings in the axial direction of the joint,

wherein said tilt suppressing means comprise the outer peripheries of said trunnions, inclined so as to spread out toward the trunnion bottoms in their longitudinal sections.